




































Soil Map—Ottawa County, Ohio  
(ARES and Szuch)



## MAP LEGEND

Area of Interest (AOI)		Area of Interest (AOI)		Very Stony Spot	
					
Soils		Soil Map Units		Wet Spot	
					
Special Point Features		Special Line Features		Other	
	Blowout		Gully		
	Borrow Pit		Short Steep Slope		
	Clay Spot		Other		
	Closed Depression	<b>Political Features</b>			Cities
	Gravel Pit	<b>Water Features</b>			Streams and Canals
	Gravelly Spot	<b>Transportation</b>			Rails
	Landfill		Interstate Highways		
	Lava Flow		US Routes		
	Marsh or swamp		Major Roads		
	Mine or Quarry		Local Roads		
	Miscellaneous Water				
	Perennial Water				
	Rock Outcrop				
	Saline Spot				
	Sandy Spot				
	Severely Eroded Spot				
	Sinkhole				
	Slide or Slip				
	Sodic Spot				
	Spoil Area				
	Stony Spot				

## MAP INFORMATION

Map Scale: 1:6,150 if printed on A size (8.5" x 11") sheet.  
The soil surveys that comprise your AOI were mapped at 1:15,840.

**Warning:** Soil Map may not be valid at this scale.  
Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service  
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>  
Coordinate System: UTM Zone 17N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ottawa County, Ohio  
Survey Area Data: Version 10, Sep 24, 2009

Date(s) aerial images were photographed: 8/22/2004

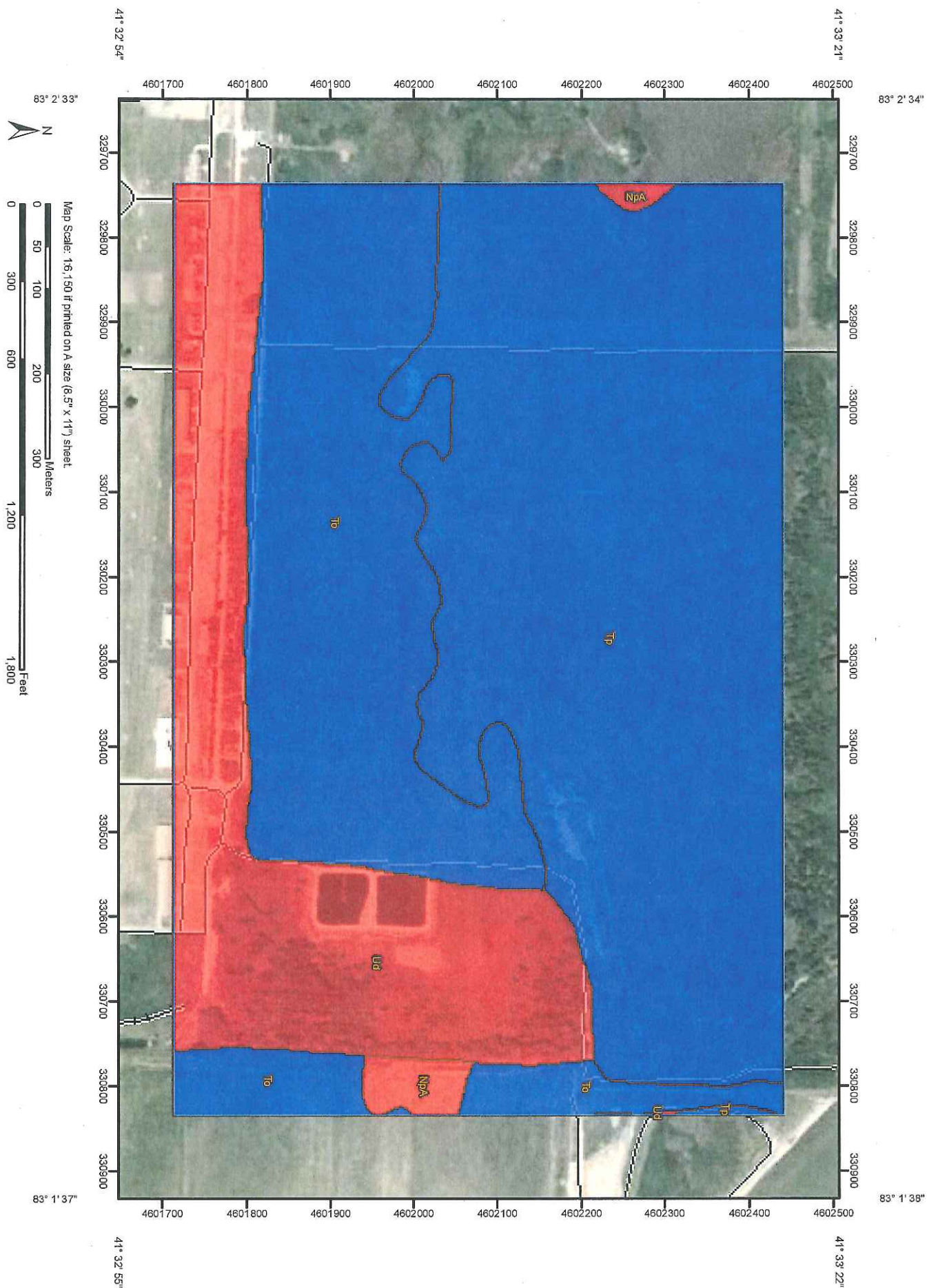
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

## Map Unit Legend














Ottawa County, Ohio (OH123)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
NpA	Nappanee silty clay loam, 0 to 3 percent slopes	2.4	1.2%
To	Toledo silty clay	55.0	27.9%
Tp	Toledo silty clay, ponded	95.7	48.5%
Ud	Udorthents, gently sloping	44.2	22.4%
Totals for Area of Interest		197.4	100.0%



# Ponding Frequency Class—Ottawa County, Ohio (ARES and Szuch Ponding)



## MAP LEGEND

- Area of Interest (AOI)**  
 Area of Interest (AOI)
- Soils**  
 Soil Map Units
- Soil Ratings**  
 None  
 Rare  
 Occasional  
 Frequent
- Political Features**  
 Cities
- Water Features**  
 Streams and Canals
- Transportation**  
 Rails  
 Interstate Highways  
 US Routes  
 Major Roads  
 Local Roads

## MAP INFORMATION

Map Scale: 1:6,150 if printed on A size (8.5" x 11") sheet.  
 The soil surveys that comprise your AOI were mapped at 1:15,840.

**Warning:** Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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## Ponding Frequency Class

Ponding Frequency Class— Summary by Map Unit — Ottawa County, Ohio (OH123)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
NpA	Nappanee silty clay loam, 0 to 3 percent slopes	None	2.4	1.2%
To	Toledo silty clay	Frequent	55.0	27.9%
Tp	Toledo silty clay, ponded	Frequent	95.7	48.5%
Ud	Udorthents, gently sloping	None	44.2	22.4%
<b>Totals for Area of Interest</b>			<b>197.4</b>	<b>100.0%</b>

### Description

Ponding is standing water in a closed depression. The water is removed only by deep percolation, transpiration, or evaporation or by a combination of these processes. Ponding frequency classes are based on the number of times that ponding occurs over a given period. Frequency is expressed as none, rare, occasional, and frequent.

"None" means that ponding is not probable. The chance of ponding is nearly 0 percent in any year.

"Rare" means that ponding is unlikely but possible under unusual weather conditions. The chance of ponding is nearly 0 percent to 5 percent in any year.

"Occasional" means that ponding occurs, on the average, once or less in 2 years. The chance of ponding is 5 to 50 percent in any year.

"Frequent" means that ponding occurs, on the average, more than once in 2 years. The chance of ponding is more than 50 percent in any year.

### Rating Options

*Aggregation Method:* Dominant Condition

*Component Percent Cutoff:* None Specified

*Tie-break Rule:* More Frequent

*Beginning Month:* January

*Ending Month:* December



Permeability of this Shoals soil is moderate. The available water capacity is high. Runoff is very slow. The seasonal high water table is at a depth of 12 to 36 inches in winter and spring and in other extended wet periods. The subsoil is slightly acid or neutral in the upper part and neutral or mildly alkaline in the lower part. The organic matter content is moderate. The root zone is deep.

Most of the acreage of this soil is cropland and permanent pasture. Drained areas are suited to corn and soybeans but poorly suited to winter wheat. The main management concerns are frequent flooding and seasonal wetness. They delay planting in most years and limit the choice of crops. Levees may be built to reduce the flood damage. Flood levels can also be reduced by keeping existing channels free of logs and other debris. Most of the acreage has been drained by surface and subsurface drains. The surface layer has a tendency to crust after hard rains. Returning crop residue to the soil, using conservation tillage that leaves crop residue on the

soil surface, and planting cover crops improve tilth, reduce crusting, and protect the surface from scouring during floods. Tilling, harvesting, or grazing when the soil is wet causes compaction.

This soil is well suited to woodland. Species selected for planting should be tolerant of some wetness and should be able to withstand flooding. Plant competition can be reduced by spraying, mowing, or disking.

This soil is generally not suited as a site for buildings and septic tank absorption fields because it is frequently flooded. It can be used for recreation, for example, hiking trails, during the drier part of the year.

This soil is in capability subclass 1Iw and woodland suitability subclass 2o.

**To—Toledo silty clay.** This deep, nearly level, very poorly drained soil is on broad flats and in long, narrow concave areas on lake plains. It is subject to ponding of short duration (fig. 6). Most areas range from 5 to more than 100 acres. Slope is 0 to 2 percent.



Figure 6.—Areas of Toledo silty clay are subject to ponding.

Typically, the surface layer is very dark grayish brown, firm silty clay about 7 inches thick. The subsoil is dark gray and gray, mottled, firm silty clay about 41 inches thick. The substratum to a depth of about 60 inches is dark grayish brown, mottled, firm silty clay. In some areas the surface layer is lighter colored, and in other areas it contains more sand. In places the subsoil has less clay.

Included with this soil in mapping are small areas of somewhat poorly drained Nappanee and Haskins soils on low knolls and side slopes along drainageways. These inclusions make up about 10 percent of most areas.

Permeability of this Toledo soil is slow. The available water capacity is moderate. Runoff is very slow or ponded. This soil has a seasonal high water table near or above the surface in winter and in spring and in other extended wet periods. The subsoil is slightly acid or neutral. The organic matter content is high. The root zone is deep.

Most of the acreage of this soil is cropland. Corn, soybeans, and small grains are the principal crops. Specialty crops are also grown in some areas. Drained areas are suited to crops, and most of the acreage has been drained. Subsurface drains are commonly used to lower the seasonal high water table where outlets are available. Open ditches and surface drains are used to remove excess surface water. This soil is sticky and plastic when wet. This soil should be tilled, harvested, and grazed within a narrow range of moisture content, because it becomes compacted and cloddy if worked when wet. Planting cover crops and returning crop residue to the soil improve tilth and increase water infiltration.

This soil is suited to woodland. Planting and harvesting can be performed during the drier part of the year. Species selected for planting should be tolerant of wetness and of a clayey surface layer and subsoil in order to reduce the seedling mortality and windthrow hazard.

This soil is poorly suited as a site for buildings. Building sites should be landscaped for good surface drainage away from foundations. Backfilling along foundations with a material low in shrink-swell potential and using drains at the base of footings reduce damage from shrinking and swelling and help prevent wet basements. Exterior basement wall coatings also help prevent wet basements. Local roads and streets can be improved by using suitable base material and providing artificial drainage to reduce damage from low soil strength, ponding, and frost action.

This soil is in capability subclass Illw and woodland suitability subclass 3w.

**Tp—Toledo silty clay, ponded.** This deep, nearly level, very poorly drained soil is in long, narrow concave areas along drainageways and on broad flats on lake

plains. It is subject to ponding of long duration. Most areas range from 5 to more than 100 acres. Slope is 0 to 2 percent.

Typically, the surface layer is very dark gray, firm silty clay about 6 inches thick. The subsoil is dark gray, mottled, firm silty clay about 35 inches thick. The substratum to a depth of about 60 inches is gray, mottled, firm silty clay. The surface layer is mucky silty clay in some areas. In places the surface layer is thicker, and in some areas it is lighter colored.

Included with this soil in mapping are small areas of somewhat poorly drained Nappanee soils on slight rises. These inclusions make up 5 to 10 percent of most areas.

Permeability of this Toledo soil is slow. The seasonal high water table is above or near the surface most of the year. The rooting depth is influenced by the water table. This soil has a moderate available water capacity. The subsoil is slightly acid or neutral. Runoff is very slow and ponds on this soil. The organic matter content is high. The root zone is deep.

Some areas of this soil are farmed. Undrained areas are generally not suited to crops; however, drained areas are suited to corn and soybeans. Levees, open ditches, subsurface and surface drains, and pump drainage are commonly used in farming areas. This soil is plastic and sticky when wet. Tilling or harvesting within a narrow range of moisture content is important, because the soil becomes compacted and cloddy if worked when wet.

Most of the acreage of this soil is used for wildlife refuges or hunting preserves. It is generally not suited to woodland. This soil provides excellent habitat for wetland wildlife, because in large areas the water level is controlled by levees and pump drainage. These drainage practices and drainage ditches and surface and subsurface drains permit the growing of grain crops and the flooding of these areas to attract and feed wetland waterfowl during migration.

This soil is generally not suited as a site for buildings and septic tank absorption fields because of ponding, high shrink-swell potential, and slow permeability.

This soil is in capability subclass IVw and is not assigned to a woodland suitability subclass.

**Ud—Udorthents, gently sloping.** These deep, nearly level and gently sloping soils are in cut and fill areas. Earthmoving and grading have obliterated or mixed the original surface layer, subsoil, and substratum. The remaining soil material typically is similar to the subsoil and substratum of adjacent soils. Slope ranges from 1 to 6 percent.

Typically, the upper 60 inches is firm and dense silty clay loam, clay, or silt loam. In fill or disposal areas, the characteristics of the soils are more variable.

Included with these soils in mapping are small areas where slopes are 6 to 15 percent.

Runoff is medium or rapid. The available water capacity is variable but is dominantly low or very low.